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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,363	10/28/2003	Stewart R. Wyatt	200205662-1	5968

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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
SUN, SCOTT C	
ART UNIT	**PAPER NUMBER**
2182	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,363	WYATT ET AL.	
	Examiner	Art Unit	
	Scott Sun	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/21/2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-24* is/are pending in the application.

4a) Of the above claim(s) *10-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/21/2005 have been fully considered but they are not persuasive. Examiner's response is detailed below.

2. Examiner summarizes applicant's argument as:

   a. Regarding claim 1, Reference White does not teach "turning off a portion of" the DRAM.

   b. Regarding claim 1, Reference White does not teach modifying operation of the storage system "based on a status of the data transfer".

   c. Regarding claim 6, Reference White does not teach turning off the ECC.

3. Examiner's Response to Argument "a" and "c":

Examiner does not agree with applicant's contentions and would like to clarify the prior rejection. Applicant points out that sleep mode does not involve turning off DRAM cells – examiner agrees. However, examiner asserts that the decoder, not the DRAM cells, is off in sleep mode. White teaches explicitly, "ECC decoding for error detection and correction need only take place upon wake up when resuming active mode" and "upon exiting sleep mode an ECC decoding circuit decodes the encoded data and corrects any detected errors" in paragraph 12. A person of ordinary skill in the art at the time of invention would readily recognize from this teaching that ECC decoding unit is not functional (turned off) in sleep mode especially because White's disclosure involves power conservation. Furthermore, because ECC decoding unit is a portion of the

memory system (figure 1 and paragraph 18), examiner asserts that White teaches turning off a portion of the memory system.

4. Examiner's Response to Argument "b":

Examiner does not agree with applicant's contentions. Examiner's prior action regarding claim 1 states that Trost, not White, discloses modifying operation of the storage system "based on status of the data transfer" by teaching "at such times as no access request is being honored, the variable rate oscillator clocks the dynamic storage subsystem at some minimum rate" (column 1, lines 55-57). To further clarify examiner's position, the status of the data transfer as taught by White is "at such times as no access request is being honored".

5. After addressing each of applicant's contentions, examiner finds that rejections cited in prior office action are still valid. Slight modifications are made to reflect applicant's amendment of incorporating claim 3 into claim 1, and cancellation of claim 3.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trost (US Patent #4,288,860) in view of White (PG Pub # US 2003/0149929 A1).

8. As per claim 1, Trost discloses a storage system, comprising:

a storage controller for managing transfer of data between a host and storage memory; (figure 1)

a data mover coupled to the storage controller, the data mover handles data transffered between the host and the storage memory; and (figure 1)

a buffer coupled to the data mover for storing data being transferred between the host and the storage memory; (figure 1)

wherein, to conserve power, the storage controller modifies operation of the storage system based on status of the data transfer. (column 1, lines 51-60)

Trost does not disclose expressly the storage system of claim 1 wherein the storage controller modifies operation of the storage system by turning off a portion of the storage system. However, White discloses the storage controller modifies operation of the storage system by turning off a portion (decoder) of the storage system. (paragraph 12, decoder is off during sleep mode). Trost's invention and White's invention are analogous art because they are from the same problem solving area of power conservation in storage systems.

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Trost's invention and White's invention by adding power-saving error correction logic disclosed in White's invention to Trost's invention to further provide Trost's storage system with power saving features while at the same time maintain data integrity. (White, paragraph 6-7)

9. As per claim 2, Trost and White combined discloses the storage system of claim 1, and Trost further discloses wherein the storage controller modifies operation of the storage system based on capacity of the buffer. (Column 6, line 66 – Column 7, line 6)

10. As per claim 4, Trost and White combined discloses the storage system of claim 1, and Trost further discloses wherein data is transferred between the data mover and host at a first transfer rate, and data is transferred between the data mover and storage memory at a second transfer rate, and wherein the storage controller modifies operation of the storage system by functioning to match the first and second transfer rates. (Column 6, lines 66 – column 7, line 6)

11. As per claim 5, Trost and White combined discloses the storage system of claim 1, and White further discloses a storage memory interface coupled to the data mover, the storage memory interface handles data transferred to and from storage memory, the storage memory interface also including error correction logic (paragraph 12, paragraph 18; figure 1)

12. As per claim 6, Trost and White combined discloses the storage system of claim 5, and White further discloses wherein the storage controller modifies operation of the storage system by turning off the error correction logic of the storage memory interface in the storage system (paragraph 12, 19-20)

As per claim 7, Trost and White combined discloses the storage system of claim 5, and White further discloses wherein the error correction logic of the storage memory interface comprises:

an encoder for encoding data to be stored in storage memory; and (figure 1, paragraph 20)

a decoder for decoding data retrieved from storage memory; (figure 1, paragraph 12, 18, 20)

Wherein the storage controller modifies operation of the storage system by turning off the decoder in the error correction logic of the storage memory interface (paragraph 19-20)

13. As per claim 8 and 9, Trost and White combined do not disclose explicitly disconnecting power or clock to the decoder. However, the examiner asserts that a person of ordinary skill in the art at the time of invention would readily recognize that turning off the decoder in the error correction logic involves disconnecting either power or clock signal to the decoder.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Sun whose telephone number is (571) 272-2675. The examiner can normally be reached on M-F, 10:30am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim N. Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/21/2005

KIM HUYNH
PRIMARY EXAMINER

12/22/05